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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/572,924	03/22/2006	John Petruzzello	PHUS030345	5007

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EXAMINER	
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ART UNIT	PAPER NUMBER
2826	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip.department.us@nxp.com

Office Action Summary	Application No.	Applicant(s)	
	10/572,924	PETRUZZELLO ET AL.	
	Examiner	Art Unit	
	SELIM AHMED	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03/22/2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/22/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This is the initial office action based on the application 11572294 filed on March 22, 2006. Claims 1-21, as originally filed, are currently pending and have been considered below.

Priority

2. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 60/504997 filed on 09/22/2003.

Information Disclosure Statement

3. The Information Disclosure Statements filed on 03/22/ 2006 has been considered.

Oath/Declaration

4. The oath or declaration filed on 03/22/2006 is acceptable.

Drawings

5. The drawings are objected to because of the following informalities:

    a. Field oxide 104 is not labeled in Fig. 1.

    b. In fig. 4, 404 is not defined in the specification.

    Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the

immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-3, 7, 8, 10 are rejected under 35 U.S.C. 102 (b) as being anticipated by Mizuta et al (US 6,100,571).

Regarding claim 1, Mizuta discloses a field effect device (Abstract), comprising: at least one segmented field plate (Fig. 10; Elements 9, 10), each of the at least one segmented field plates having a plurality of segments (Fig. 9; Element 9) that each form a plate of a capacitor (Fig. 9; Elements 9, 6, 2 form capacitor), wherein the field effect device is connected to an electronic device (col. 5; lines 28-42, col. 7/8; lines 66-15) that dynamically connects selected segments to selectively set a gate-to-drain (CGD), and a drain-to-source (Cds) capacitance (col. 5; lines 28-42, col. 7/8; lines 66-15).

Regarding claim 2, Mizuta discloses a field effect device (Abstract) as recited in claim 1, wherein the at least one segmented field plate further comprises a first segmented field plate (Fig. 10; Element 13) and a second segmented field plate (Fig. 10; Element 9).

Regarding claim 3, Mizuta discloses a field effect device (Abstract) as recited in claim 1, wherein the field effect device is a metal-oxide-semiconductor field effect transistor (MOSFET) (claim 1).

Regarding claim 7, Mizuta discloses a field effect device (Abstract) as recited in claim 1, wherein the field effect device is a semiconductor transistor, and the semiconductor is one of silicon, silicon-germanium or a III-V semiconductor material (col. 8; line 47).

Regarding claim 8, Mizuta discloses a field effect device (Abstract) as recited in claim 1, wherein a ratio Of CGD to CDS is selectively and dynamically controlled by the electronic device (col. 8; lines 12-15).

Regarding claim 10, Mizuta discloses of a field effect device (Abstract) as recited in claim 1, wherein the field effect device is a component of an electrical switch (col.7, line 61; besides FET can be used as a switch).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuta et al (US 6,100,571).

Regarding claim 9, Mizuta discloses all of the limitations of a field effect device (Abstract) as recited in claim 8, but does not disclose the ratio is in the range of approximately 0.3 to approximately less than 0.9. However, it has been held that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover optimum or workable ranges by routine experimentation. In re Aller, 220 F.2d 454, 105 USPQ 233, 234 (CCPA 1955). Furthermore, where patentability is said to based upon particular chosen range or dimension recited in a

claim, the Applicant must show that the chosen range or dimension is critical. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have the ratio in such a range as claimed, because the range is not critical since it can be optimized during routine experimentation, depending upon the conductivity desired for the second barrier layer.

9. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuta et al (US 6,100,571) in view of Akiyama (US 20020043699).

Regarding claims 4 and 5, Mizuta discloses all of the limitations as recited in claims 2 and 4 respectively with the exception of the second field plate is at least partially disposed over the first field plate or a dielectric layer is disposed between the first and the second segmented field plates at a location where the second field plate partially overlaps the first field plate. However, such arrangements of first and second field plates and dielectric layer are disclosed by Akiyama (Fig. 3). Because such arrangements reinforce capacitive coupling and stabilize breakdown voltage, it would have been obvious to one having ordinary skill in the art at the time of the invention to use such structure.

10. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuta et al (US 6,100,571) in view of Letavic et al (US 5973341).

Regarding claim 6, Mizuta discloses all of the limitations of claim 1 with the exception of the filed effect device is a semiconductor on insulator structure. However, field effect device is semiconductor on insulator structure is disclosed by Letavic (Fig. 3; Element 24). Because semiconductor on insulator provides improved performance characteristics such as leakage, it would have been obvious to one having ordinary skill in the art at the time of the invention to use semiconductor on insulator.

11. Claims 11-15, 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuta et al (US 6,100,571) in view of Mercier et al (US 6,051,895).

Regarding claim 11, Mizuta discloses the switching device includes a field effect device (Abstract) that includes at least one segmented field plate (Fig. 10; Elements 9, 10), each of the at least one segmented field plates having a plurality of segments (Fig. 9; Element 9) that each form a plate of a capacitor (Fig. 9; Elements 9, 6, 2 form capacitor); and wherein the field effect device is connected to an electronic device (col. 5; lines 28-42, col. 7/8; lines 66-15) that dynamically connects selected segments to selectively set a gate-to-drain (CGD) and a drain-to-source capacitance (CDS) (col. 5; lines 28-42, col. 7/8; lines 66-15).

As discussed above, Mizuta discloses all of the limitations of claim 11 with the exception of an ultrasonic device that comprising a transducer coupled to a switching device that switches the transducer between a transmit mode and a receive mode. However, an ultrasonic device that comprising a transducer coupled

to a switching device is disclosed by Mercier (Abstract). Because a transducer and a switching device can be combined to construct an ultrasonic device, it would have been obvious to one having ordinary skill in the art at the time of the invention to combine the transducer with the field effect device.

Regarding claims 12 and 13, the claims are directed to how the device being optimally operated than their structural limitations. An apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Schreiber,* 128 F.3d 1473, 1477-78, 44USPQ2d 1429, 1431-32 (Fed. Cir. 1997) (The absence of a disclosure in a prior art reference relating to function did not defeat the Board's finding of anticipation of claimed apparatus because the limitations at issue were found to be inherent in the prior art reference); see also *In re Swinehart*, 439 F.2d 210 212-13, 169 USPQ 226, 228-29 (CCPA 1971); *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). "Apparatus claims cover what a deivce is, not what a device does." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990).

Regarding claim 14, Mizuta in view of Mercier discloses an ultrasonic device as recited in claim 11, wherein the at least one segmented field plate further comprises a first segmented field plate (Fig. 10; Element 13) and a second segmented field plate (Fig. 10; Element 9).

Regarding claim 15, Mizuta in view of Mercier discloses an ultrasonic device as recited in claim 11, wherein the field effect device is a metal-oxide-semiconductor field effect transistor (MOSFET) (claim 1).

Regarding claim 19, Mizuta in view of Mercier discloses an ultrasonic device as recited in claim 11, wherein the field effect device is a semiconductor transistor, and the semiconductor is one of silicon, silicon-germanium or a III-V semiconductor material (col. 8; lines 47).

Regarding claim 20, Mizuta in view of Mercier discloses all of the limitations of an ultrasonic device as recited in claim 11, additionally, the electronic device includes a multiplexer, which receives an input from the transducer, and based on the input effects the dynamic selection (Mercier; col. 1; lines 23-24). Because multiplexer is used to select particular signal, it would have been to one having ordinary skill in the art at the time of the invention to use multiplexer.

Regarding claim 21, Mizuta in view of Mercier discloses an ultrasonic device as recited in claim 11, wherein CGD is less than CDS (Seventh Embodiment).

12. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuta et al (US 6,100,571) in view of Mercier et al (US 6,051,895) and further in view of Akiyama (US 2002/0043699).

Regarding claims 16 and 17, Mizuta in view of Mercier discloses all of the limitations as recited in claims 13 and 15 respectively with the exception of the second field plate is at least partially disposed over the first field plate or a dielectric layer is disposed between the first and the second segmented field plates at a location where the second field plate partially overlaps the first field plate. However, such arrangements of first and second field plates and dielectric layer are disclosed by Akiyama (Fig. 3). Because such arrangements reinforce capacitive coupling and stabilize breakdown voltage, it would have been obvious to one having ordinary skill in the art at the time of the invention to use such structure.

13. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuta et al (US 6,100,571) in view of Mercier et al (US 6,051,895) and further in view of Letavic et al (US 5973341).

Regarding claim 18, Mizuta in view of Mercier discloses all of the limitations as recited in claim 14 with the exception of the filed effect device is a semiconductor on insulator structure. However, field effect device is semiconductor on insulator structure is disclosed by Letavic (Fig. 3; Element 24). Because semiconductor on insulator provides improved performance characteristics such as leakage, it would have been obvious to one having ordinary skill in the art at the time of the invention to use semiconductor on insulator.

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SELIM AHMED whose telephone number is (571)270-5025. The examiner can normally be reached on 9:00 AM-6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Purvis Sue can be reached on (571) 272-1236. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SA
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